

I claim:

1. A method of transmitting packets over a computer network, comprising the steps of:

(1) from a transmitting node, transmitting a query to an intended receiving node;  
(2) receiving from the intended receiving node a reception map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters;

(3) from the transmitting node, transmitting a proposed transmission map indicating time slots, compatible with the reception map, during which the transmitting node intends to transmit packets; and

(4) from the transmitting node, transmitting packets to the intended receiving node according to the proposed transmission map.

2. The method of claim 1, further comprising the step of, prior to step (4), receiving an agreement from the intended receiving node and, if no agreement is received, transmitting in step (4) according to an alternative transmission map.

3. The method of claim 2, wherein the alternative transmission map is proposed by the intended receiving node.

4. The method of claim 1, wherein step (4) comprises the step of repeatedly transmitting packets to the intended receiving node according to the proposed transmission map.

5. The method of claim 1, further comprising the step of, at the intended receiving node, generating the reception map on the basis of previously allocated time slots from other transmitting nodes.

6. The method of claim 5, wherein the reception map comprises a bitmap, wherein each bit corresponds to one of a plurality of timeslots, each bit indicating whether that corresponding timeslot has previously been allocated.

7. The method of claim 1, further comprising the step of periodically synchronizing, as between the transmitting node and the receiving node, a time period on which the proposed transmission map is used in step (4).

8. The method of claim 7, wherein the synchronizing step comprises the step of using an electrical connection over which a synchronization signal is transmitted, separate and apart from any network connection.

9. The method of claim 7, wherein the synchronizing step comprises the step of transmitting synchronization packets over the network.

10. A method of transmitting packets over a computer network, comprising the steps of:

(1) from a transmitting node, transmitting a bandwidth requirement to an intended receiving node;

(2) receiving from the intended receiving node a transmission map indicating time slots during which transmission to the intended receiving node would not conflict with other transmitters; and

(3) from the transmitting node, transmitting packets to the intended receiving node according to the transmission map.

11. The method of claim 10, further comprising the step of, at the intended receiving node, generating the transmission map based on the bandwidth requirement transmitted from the transmitting node.

12. The method of claim 10, further comprising the step of synchronizing between the transmitting node and the intended receiving node a time period on which the transmission map is based.

13. The method of claim 12, wherein the synchronizing step comprises the step of using an electrical connection over which a synchronization signal is transmitted, separate and apart from any network connection.

14. The method of claim 12, wherein the synchronizing step comprises the step of transmitting synchronization packets over the network.

15. A method of transmitting packets over a computer network, comprising the steps of:

(1) from a transmitting node, transmitting a proposed delivery schedule to an intended receiving node, wherein the proposed delivery schedule indicates time slots corresponding to times during which the transmitting node proposes to transmit packets to the intended receiving node;

(2) receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node; and

(3) if the proposed delivery schedule is acceptable, transmitting packets to the intended receiving node according to the proposed delivery schedule.

16. The method of claim 15, further comprising the step of, upon determining that the proposed delivery schedule is not acceptable to the intended receiving node, receiving from the intended receiving node an alternate delivery schedule and using the alternate delivery schedule to transmit the packets in step (3).

17. The method of claim 15, further comprising the step of, at the intended receiving node, determining whether the proposed delivery schedule is acceptable by comparing time slots proposed to be used by the transmitting node to previously allocated time slots allocated by other transmitters.

18. The method of claim 15, further comprising the step of synchronizing between the transmitting node and the intended receiving node a time period on which the delivery schedule is based.

19. The method of claim 18, wherein the synchronizing step comprises the step of using an electrical connection over which a synchronization signal is transmitted, separate and apart from any network connection.

20. The method of claim 18, wherein the synchronizing step comprises the step of transmitting synchronization packets over the network.

21. A computer programmed with executable instructions that, when executed, perform the following steps:

(1) transmitting a proposed delivery schedule to an intended receiving node, wherein the proposed delivery schedule indicates time slots corresponding to times during which the computer proposes to transmit packets to the intended receiving node;

(2) receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node; and

(3) if the proposed delivery schedule is acceptable to the intended receiving node, transmitting packets to the intended receiving node according to the proposed delivery schedule.

22. The computer according to claim 21, further comprising executable instructions that, when executed, perform the step of receiving from the intended receiving node an

alternative delivery schedule and using the alternative delivery schedule as the basis for transmitting packets in step (3).

23. The computer according to claim 21, further comprising means for synchronizing the proposed delivery schedule with the intended receiving node.

24. The computer according to claim 23, wherein the means comprises a wire linked to the intended receiving node, wherein the wire is separate from any network connection to the intended receiving node.

25. The computer according to claim 23, wherein the means comprises computer instructions that process a synchronization packet transmitted over a network connection with the intended receiving node.

26. A method of transmitting packets over an Ethernet, comprising the computer-implemented steps of:

- (1) from a transmitting node, transmitting a query to an intended receiving node;
- (2) at the intended receiving node, generating a reception map indicating which of a plurality of discrete time slots have been previously allocated for transmission of packets to that intended receiving node, wherein each time slot represents a unit of time within a transmission interval over the Ethernet;
- (3) transmitting the reception map from the intended receiving node to the transmitting node;
- (4) from the transmitting node, transmitting to the intended receiving node a proposed transmission map indicating time slots, compatible with the reception map, during which the transmitting node intends to transmit packets to the intended receiving node over the Ethernet;
- (5) from the transmitting node, transmitting packets to the intended receiving node according to the proposed transmission map; and
- (6) maintaining time synchronization as to the discrete time slots between the transmitting node and the receiving node through the use of an electrical connection that is separate and apart from any network connection between the transmitting node and the intended receiving node.